



Journalist and broadcaster Lesley Riddoch has a keen interest in marine renewables and is involved with a European marine research project called 'Equimar'. Here she describes the world's biggest project to monitor the impact of tidal turbines on seals

Seal of approval

Can 'active sonar' help safeguard seals, porpoises, dolphins and seabirds near the tidal turbines that will soon provide clean, renewable energy around the Scottish coastline?

Scottish marine biologists from St Andrews and Orkney are working on a pioneering use of sonar that can distinguish between approaching seal pups and clumps of seaweed, and will shut down tidal devices if necessary.

However, the company at the centre of the world's biggest marine energy environmental monitoring project in Northern Ireland say that so far they've found no measurable impacts from tidal turbines on seals, porpoises and seabirds.

Bristol-based tidal energy developer Marine Current Turbines (MCT) have spent £3 million on detailed monitoring work around their twin-turbine 'SeaGen' device, installed in 2008 in Strangford Lough, near Belfast. The lough is a national nature reserve with a long-established seal colony.

Biologists and engineers are recording changes in sea mammal and bird activity over a five-year period. They're using transmitters glued to the fur on seals' heads to establish movement patterns. Additionally, a 'spotter' on SeaGen's control tower must press a stop button if an animal is spotted within 46 metres (150 ft).

Divers have examined the impact of turbines on kelp and sponge growth



1
A seal in Strangford Lough with an electronic device attached so that its movements can be tracked.

2
SeaGen is a tidal energy converter that is operating in Strangford Lough in Northern Ireland.



growth (part of the seal's food chain) and there's been aerial monitoring. In addition, the developer has to collect any dead seals, but none of those found last year appears to have been injured by turbine blades.

There's also been work to measure the effect of noise under water – too much when the turbines are being installed and mammals could be deafened and disoriented; too little when they're operational and animals won't even know the turbines are there.

According to Queen's University biologist Graham Savidge, whose team has recorded half a million animal movements in three years, the results to date are encouraging. "Few seals are found in the fastest currents," he commented, "as the majority prefer the lower water speeds of the lough's margins."

And, according to Martin Wright, managing director of MCT, the work has been vital because technologies like SeaGen must be genuinely sustainable and environmentally friendly. "The cost has been a big burden though," he remarked, "and could prove too much for future projects. I'm hopeful the data will increase confidence among regulators, and that the UK Marine & Coastal Access Act and the Marine (Scotland) Bill will make it easier and less expensive for marine devices to be installed."

However, even one seal death at a turbine would be very serious for developers. A 30% drop in common seal numbers – thought to be mainly a

result of killer whales preying on them – has almost put the species on the endangered list.

So the University of St Andrews Sea Mammal Research Unit (SMRU) Ltd. and Orkney-based EMEC (European Marine Energy Centre) are 'training' sonar technology to detect seal pups, using sightings to confirm and improve recognition. 'Seal sonar' will eventually be able to shut down devices automatically if a seal comes near.

"The marine industry will have to get used to wildlife monitoring because it isn't going away," commented Professor Ian Boyd of SMRU. "Any impacts of turbines on sea mammals will only become apparent over the long term in test sites and at sea. Marine energy developers will therefore need to maintain a high level of alertness when the turbines are being developed and also when they're operating."

A Scottish-based European marine research project, Equimar (www.equimar.org), could help decide the issue. Equimar is a project involving 61 scientists, developers and biologists from 11 countries, charged by the European Union to come up with marine industry guidelines by 2011.

According to Equimar co-ordinator Dr David Ingram, of Edinburgh University, if 'seal sonar' works Equimar may recommend its use at test sites. "But if no measurable impact on wildlife is found there, we could recommend that developers don't need to use sonar again when their device is finally out at sea," he concluded.